AMENDMENTS TO THE CLAIMS

In the set of claims within the Application, please amend and retain each claim as hereinafter indicated.

1. (Currently Amended) A ~~computer-based~~ method for generating and analyzing ~~a set of~~ random ~~numbers with statistics represented by a cumulative density function~~ sample values on a computer, said method comprising the steps of:

(a) generating a set of numbers that are substantially uniformly ~~spaced samples~~ distributed between an upper numerical limit and a lower numerical limit;

(b) ~~mapping~~ utilizing a computer to map each one of said ~~set of uniformly spaced samples~~ numbers to a corresponding sample value on a cumulative density function (CDF) curve; [[and]]

(c) collecting each said sample value into an ordered set of sample values;

(d) scrambling said ordered set of ~~uniformly spaced samples~~ sample values so as to reorder said sample values in a substantially random manner and thereby form a random set of sample values; and

(e) utilizing said random set of sample values to form histogram-type output that is viewable on said computer for statistical analysis.

2. (Currently Amended) The method of claim 1, wherein said ~~set of uniformly spaced samples~~ numbers are ordered in descending ~~fashion~~ order, and said sample values are ordered in ascending order.

3. (Currently Amended) The method of claim [[2]] 1, wherein said ~~set of uniformly spaced samples have an~~ upper numerical limit [[of]] is substantially equal to 1, and [[a]] said lower numerical limit [[of]] is substantially equal to 0.

4. (Currently Amended) The method of claim [[2]] 1, wherein said ~~set of uniformly spaced samples have an~~ upper numerical limit [[of]] is substantially equal to 100%, and [[a]] said lower numerical limit [[of]] is substantially equal to 0%.

5. (Currently Amended) The method of claim [[2]] 1, wherein said ~~step of mapping said corresponding value for each of said set of uniformly spaced samples includes looking up~~

~~said corresponding value, which is stored in ascending order in a look-up table~~ cumulative density function curve is represented by a look-up table stored on said computer.

6. (Currently Amended) The method of claim 5, wherein ~~said step of looking up proceeds~~ each one of said numbers is mapped to a corresponding sample value on said cumulative density function curve by particularly looking up each said corresponding sample value in said look-up table without the need for [[any]] pre-sorting said numbers.

7. (Currently Amended) The method of claim 1, said method further comprising the step of:

~~companding said uniformly spaced samples in order to increase the representation of low-probability samples~~

generating at least one alternative set of numbers via companding such that said numbers are substantially uniformly distributed and more closely interspaced in at least one section between said upper numerical limit and said lower numerical limit so as to ensure that a sufficient amount of corresponding sample values can be successfully collected from any low-probability area defined by said cumulative density function curve and that any said low-probability area is therefore not disproportionately underrepresented by said sample values.

8. (Currently Amended) The method of claim 7, ~~wherein~~ said method further comprising the step of determining a percentage number of ~~events occurring in~~ sample values collectable from said low-probability area ~~is determined~~ as compared to a percentage number of sample values collectable from a high-probability area defined by said cumulative density function curve.

9. (Currently Amended) The method of claim 8, ~~wherein based on the relative percentages between said low-probability area and said high-probability area, said samples in said low-probability area are increased by a companding factor, while said samples in said high-probability area are decreased by said companding factor~~ said method further comprising the steps of:

increasing the number of sample values collected from said low-probability area by a companding factor; and

decreasing the number of sample values collected from said high-probability area by said companding factor;

wherein said companding factor is based on a comparison between said percentage number of sample values collectable from said low-probability area and said percentage number of sample values collectable from said high-probability area.

10. (Currently Amended) The method of claim 9, ~~wherein a probability of said high-probability area is divided~~ said method further comprising the step of dividing the probability of collecting sample values from said high-probability area by said companding factor.

11. (Currently Amended) A ~~computer-based~~ method ~~of random number generation with a desired cumulative density function~~ for generating and analyzing random sample values on a computer according to a probability density function (PDF), said method comprising the steps of:

~~generating a set of discrete samples between an upper limit and a lower limit;~~

~~uniformly stepping said set of discrete samples in descending order between said upper limit and said lower limit; and~~

(a) generating a set of numbers that are substantially uniformly distributed and spaced apart between an upper numerical limit and a lower numerical limit;

~~mapping said set of random numbers to a set of values stored in ascending order and having a specified probability density function~~

(b) utilizing a computer to map each one of said numbers to a corresponding sample value on a cumulative density function (CDF) curve, which is mathematically related to said probability density function and represented by a look-up table stored on said computer;

(c) collecting each said sample value into an ordered set of sample values;

(d) scrambling said ordered set of sample values so as to reorder said sample values in a substantially random manner and thereby form a random set of sample values; and

(e) utilizing said random set of sample values to form histogram-type output that is viewable on said computer for statistical analysis.

12. (Currently Amended) The method of claim 11, ~~further comprising: scrambling said set of discrete samples between said upper limit and said lower limit~~ wherein step (d) is at least partially accomplished by utilizing a pseudo-random number (PRN) sequence.

13. (Currently Amended) The method of claim 11, wherein said upper numerical limit is substantially equal to 1, and said lower numerical limit is substantially equal to 0.

14. (Currently Amended) The method of claim 11, wherein said upper numerical limit is substantially equal to 100%, and said lower numerical limit is substantially equal to 0%.

15. (Currently Amended) The method of claim 11, said method further comprising the step of:

~~companding said set of discrete samples to provide a more accurate representation of low-probability samples~~

generating alternative sets of numbers via companding such that said alternative sets of numbers are spaced apart between said upper numerical limit and said lower numerical limit so as to ensure that sufficient amounts of corresponding sample values can be successfully collected from any low-probability area and any high-probability area defined by said cumulative density function curve.

16. (Currently Amended) The method of claim 15, wherein said ~~step of~~ companding ~~includes, compressing the number of low probability samples using larger stepping intervals while expanding the number of high-probability samples using smaller stepping intervals~~ is at least partially accomplished by:

reducing the spacing between said numbers in at least one section between said upper numerical limit and said lower numerical limit so as to ensure that a sufficient amount of corresponding sample values can be successfully collected from any low-probability area defined by said cumulative density function curve and that any said low-probability area is therefore not disproportionately underrepresented by said sample values; and

increasing the spacing between said numbers in at least one other section between said upper numerical limit and said lower numerical limit so as to ensure that a sufficient amount of corresponding sample values can be successfully collected from any high-probability area defined by said cumulative density function curve while also ensuring that said high-probability area is not disproportionately overrepresented by said sample values.

17. (Currently Amended) A ~~computer-based random number generation~~ system for generating and analyzing random sample values on a computer, said system comprising:

~~a first component for generating uniformly spaced numbers, independent of a total number of samples;~~

~~a second component for mapping said generated random numbers into a desired distribution through table lookup and scrambling; and~~

~~a third component for reducing said total number of samples needed to achieve a given statistical accuracy~~

a computer; and

a look-up table stored on said computer;

wherein said computer is operable to

(a) generate a set of numbers that are substantially uniformly distributed between an upper numerical limit and a lower numerical limit;

(b) map each one of said numbers to a corresponding sample value on a cumulative density function (CDF) curve that is represented by said look-up table;

(c) collect each said sample value into an ordered set of sample values;

(d) scrambling said ordered set of sample values so as to reorder said sample values in a substantially random manner and thereby form a random set of sample values; and

(e) utilizing said random set of sample values to form histogram-type output that is viewable on said computer for statistical analysis.

18. (Currently Amended) The system of claim 17, wherein said ~~generated random numbers are uniformly spaced between an~~ upper numerical limit [[of]] is substantially equal to 1 or 100%, and [[a]] said lower numerical limit [[of]] is substantially equal to 0 or 0%.

19. (Currently Amended) The system of claim 17, wherein said ~~third component compresses the number of low probability samples while expanding the number of high-probability samples~~ computer is also operable to generate alternative sets of numbers via companding such that said alternative sets of numbers are spaced apart between said upper numerical limit and said lower numerical limit so as to ensure that sufficient amounts of corresponding sample values can be successfully collected from any low-probability area and any high-probability area defined by said cumulative density function curve.

20. (Currently Amended) The system of claim 17, wherein said ~~generated random~~ numbers are ordered in descending ~~fashion~~ order, and said sample values are ordered in ascending order.